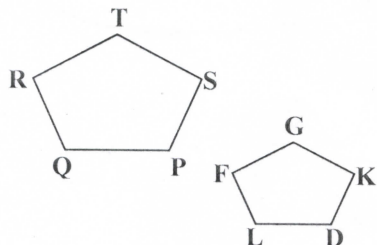


**Chapter 6 – Similar Figures**

1. Pentagon RTSPQ is similar to pentagon FGKDL. Complete the similarity ratio below.



$$\frac{RT}{FG} = \frac{PS}{DK}$$

2. Solve for x.

$$\frac{5}{8} = \frac{x}{12}$$

$$8x = 5 \cdot 12$$

$$8x = 60$$

$$\frac{8x}{8} = \frac{60}{8}$$

$$x = 7.5$$

3. Solve for x.

$$\frac{3x-5}{4} = \frac{-5}{7}$$

$$7(3x-5) = 4 \cdot -5$$

$$21x - 35 = -20$$

$$+35 \quad +35$$

$$\frac{21x}{21} = \frac{15}{21}$$

$$x = \frac{5}{7}$$

4. The ratio of the measures of the sides of a triangle is 6:7:9. The perimeter is 154. Find the sides.

$$6x \quad 7x \quad 9x$$

$$6x + 7x + 9x = 154$$

$$22x = 154$$

$$\frac{22x}{22} = \frac{154}{22}$$

$$x = 7$$

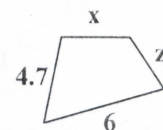
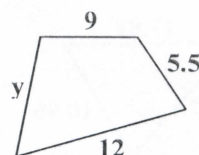
5. The two polygons are similar. Find x, y, and z.

$$\frac{6}{12} = \frac{4.7}{y}$$

$$12 \cdot 4.7 = 6y$$

$$\frac{56.4}{6} = \frac{6y}{6}$$

$$9.4 = y$$



$$\frac{6}{12} = \frac{x}{9}$$

$$12x = 6 \cdot 9$$

$$\frac{12x}{12} = \frac{54}{12}$$

$$x = 4.5$$

$$\frac{6}{12} = \frac{z}{5.5}$$

$$12z = 6 \cdot 5.5$$

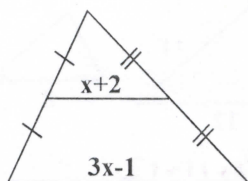
$$\frac{12z}{12} = \frac{33}{12}$$

$$z = 2.75$$

6. Explain the difference between similar and congruent.

congruent - same size and shape  
similar - same shape

7. Solve for x.



$$2(x+2) = 3x-1$$

$$2x+4 = 3x-1$$

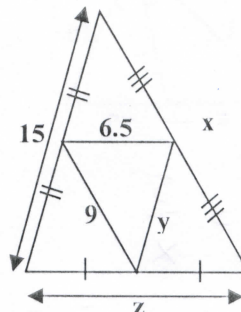
$$-2x \quad -2x$$

$$4 = x-1$$

$$+1 \quad +1$$

$$5 = x$$

8. Find x, y, and z.



$$z = 2 \cdot 6.5$$

$$z = 13$$

$$x = 2 \cdot 9$$

$$x = 18$$

$$2y = 15$$

$$\frac{2y}{2} = \frac{15}{2}$$

$$y = 7.5$$

9. What are the three ways to prove that triangles are similar?

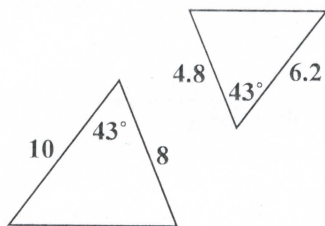
$AA \sim$

$SSS \sim$  - all sides proportional

$SAS \sim$

- sides proportional, angle congruent

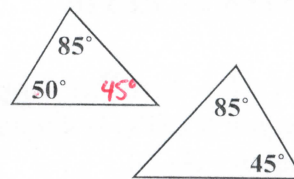
10. Are the triangles similar? If so, by what postulate.



$$\frac{6.2}{10} = \frac{62}{100} \quad \frac{4.8}{8} = \frac{60}{100}$$

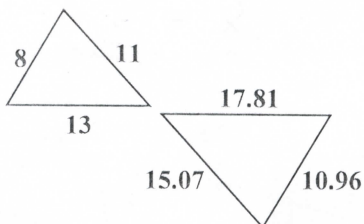
NO

11. Are the triangles similar? If so, by what postulate.



YES  $AA \sim$

12. Are the triangles similar? If so, by what postulate.



$$\frac{13}{17.81} = .73$$

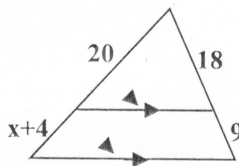
$$\frac{11}{15.07} = .73$$

$$\frac{8}{10.96} = .73$$

YES

$SSS \sim$

13. Solve for x.



$$\frac{18}{27} = \frac{20}{20+(x+4)}$$

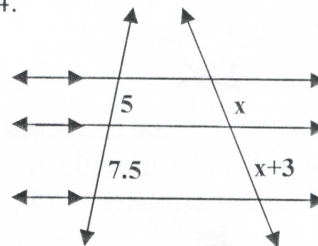
$$20 \cdot 27 = 18(x+24)$$

$$540 = 18x + 432$$

$$108 = 18x$$

$$\underline{6 = x}$$

14.



$$\frac{5}{7.5} = \frac{x}{x+3}$$

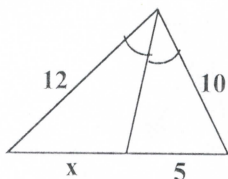
$$7.5x = 5(x+3)$$

$$7.5x = 5x + 15$$

$$2.5x = 15$$

$$\underline{x = 6}$$

15. Solve for x.



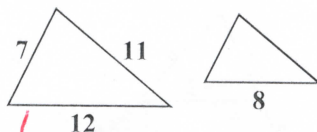
$$\frac{10}{12} = \frac{5}{x}$$

$$10x = 5 \cdot 12$$

$$10x = 60$$

$$\underline{x = 6}$$

16. The triangles are similar. Find the perimeter of the smaller triangle.



$$P_1 = 7 + 11 + 12 = 30$$

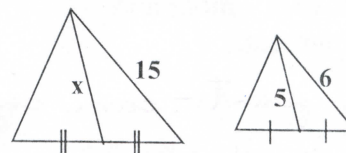
$$\frac{8}{12} = \frac{P_2}{30}$$

$$12 \cdot P_2 = 8 \cdot 30$$

$$12 \cdot P_2 = 240$$

$$\underline{P_{\text{small}} = 20}$$

17. The triangles are similar. Solve for x.



$$\frac{6}{15} = \frac{5}{x}$$

$$6x = 5 \cdot 15$$

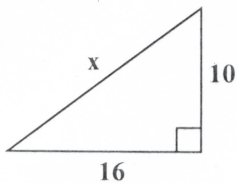
$$6x = 75$$

$$\underline{x = 12.5}$$

$$S = \frac{O}{H} \quad C = \frac{A}{H} \quad T = \frac{O}{A}$$

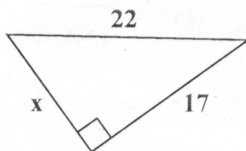
## Chapter 7 – Right Triangle Trig

1. Solve for x.



$$\begin{aligned} 10^2 + 16^2 &= x^2 \\ 100 + 256 &= x^2 \\ 356 &= x^2 \\ 18.87 &= x \end{aligned}$$

2. Solve for x.



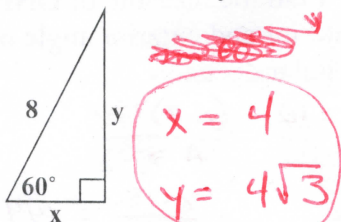
$$\begin{aligned} x^2 + 17^2 &= 22^2 \\ x^2 + 289 &= 484 \\ x^2 &= 195 \\ x &= 13.96 \end{aligned}$$

3. Can the following be sides of a right triangle? — YES  
Do the numbers form a Pythagorean triple? — NO,  $4\sqrt{3}$  IS NOT AN INTEGER

$$4, 4\sqrt{3}, 8$$

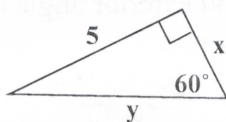
$$\begin{aligned} 4^2 + 4\sqrt{3}^2 &\stackrel{?}{=} 8^2 \\ 16 + 48 &= 64 \\ 64 &= 64 \end{aligned}$$

4. Solve for x and y.



$$\begin{aligned} x &= 4 \\ y &= 4\sqrt{3} \end{aligned}$$

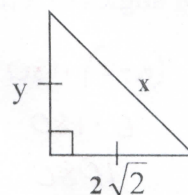
5. Solve for x and y.



$$x = \frac{5}{\sqrt{3}} \quad y = 2 \cdot \frac{5\sqrt{3}}{3}$$

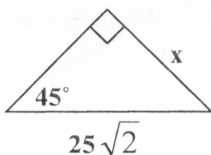
$$x = \frac{5\sqrt{3}}{3} \quad y = \frac{10\sqrt{3}}{3}$$

6. Solve for x and y.



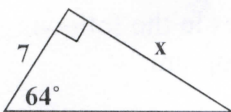
$$\begin{aligned} y &= 2\sqrt{2} \\ x &= 4 \end{aligned}$$

7. Solve for x.



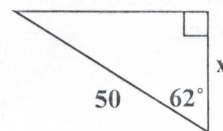
$$x = 25$$

8. Solve for x.



$$\begin{aligned} \tan 64^\circ &= \frac{x}{7} \\ 7 \cdot \tan 64^\circ &= x \\ 14.35 &= x \end{aligned}$$

9. Solve for x.



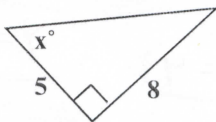
$$\begin{aligned} \cos 62^\circ &= \frac{x}{50} \\ 50 \cdot \cos 62^\circ &= x \\ 23.47 &= x \end{aligned}$$

10. Solve for x.



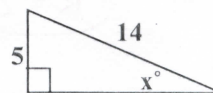
$$\begin{aligned} \cos x^\circ &= \frac{5}{8} \\ \cos^{-1}\left(\frac{5}{8}\right) &= x \\ 51.32^\circ &= x \end{aligned}$$

11. Solve for x.



$$\begin{aligned} \tan x^\circ &= \frac{8}{5} \\ \tan^{-1}\left(\frac{8}{5}\right) &= x^\circ \\ 57.99^\circ &= x \end{aligned}$$

12. Solve for x.



$$\begin{aligned} \sin x &= \frac{5}{14} \\ \sin^{-1}\left(\frac{5}{14}\right) &= x \\ 20.92^\circ &= x \end{aligned}$$



13. A meteorologist measures the angle of elevation of a weather balloon as  $41^\circ$ . A radio signal from the balloon indicates that it is 1503 meters from her location. How high is the weather balloon above the ground?



$$\sin 41^\circ = \frac{h}{1503m}$$

$$1503m \cdot \sin 41^\circ = h$$

$$986.06m = h$$

## Chapter 8: Properties of Quadrilaterals

1. Find the sum of the interior and exterior angles of a regular octagon.

$$n = 8 \quad (n-2) \cdot 180$$

$$6 \cdot 180$$

$$1080$$

Sum Interior: 1080°

Sum Exterior: 360°

2. Find the measure of **ONE** interior and exterior angle of a regular 20-gon.

$$n = 20 \quad \frac{(n-2) \cdot 180}{n}$$

$$\frac{360}{20} = 18 \quad \frac{18 \cdot 180}{20} = 162^\circ$$

One Interior: 162°

One Exterior: 18°

3. Find the measure of **ONE** interior and exterior angle of a regular decagon.

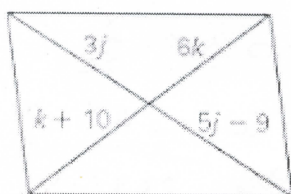
$$n = 10 \quad \frac{(n-2) \cdot 180}{n}$$

$$\frac{8 \cdot 180}{10} = 144^\circ$$

One Interior: 144°

One Exterior: 36°

4. Find the value for the variables in the following parallelogram.



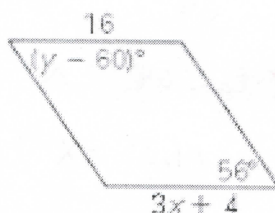
$$3j = 5j - 9 \quad 6k = k + 10$$

$$0 = 2j - 9 \quad 5k = 10$$

$$9 = 2j \quad k = 2$$

$$4.5 = j$$

5. Find the value for the variables in the following parallelogram.

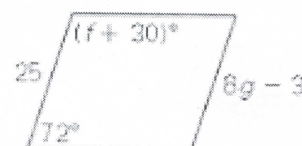


$$3x + 4 = 16 \quad y - 60 = 56$$

$$3x = 12 \quad y = 116^\circ$$

$$x = 4 \quad y = 116^\circ$$

6. Find the value for the variables in the following parallelogram.



$$8g - 3 = 25 \quad 72 + (f + 30) = 180^\circ$$

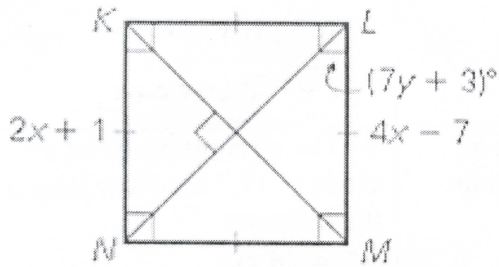
$$8g = 28 \quad 102 + f = 180^\circ$$

$$g = 3.5 \quad f = 78^\circ$$



7. Classify the following quadrilateral and use that information to solve for the variables.

**SQUARE**



$$2x+1 = 4x-7$$

$$1 = 2x-7$$

$$8 = 2x$$

$$4 = x$$

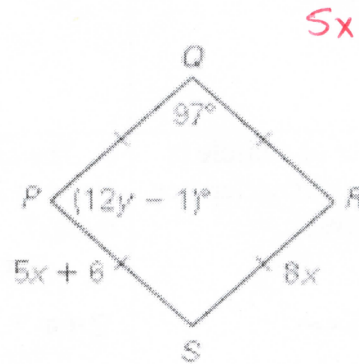
$$7y+3 = 45$$

$$7y = 42$$

$$y = 6^\circ$$

8. Classify the following quadrilateral and use that information to solve for the variables.

**RHOMBUS**



$$5x+6 = 8x$$

$$6 = 3x$$

$$2 = x$$

$$97 + (12y-1) = 180$$

$$12y+96 = 180$$

$$12y = 84$$

$$y = 7$$

9. Name each polygon:

3 sides **TRIANGLE**

8 sides **OCTAGON**

4 sides **QUADRILATERAL**

9 sides **NONAGON**

5 sides **PENTAGON**

10 sides **DECAHON**

6 sides **HEXAGON**

12 sides **DODECAHON**

## Chapter 10 - Circles

1. Identify each part of the circle.

a. Name: **CIRCLE A**

g.  $\overleftrightarrow{HJ}$ : **TANGENT LINE**

b.  $\overline{AB}$ : **RADIUS**

h. Pt. A: **CENTER**

c.  $\overline{CD}$ : **CHORD**

i. Pt. E: **POINT OF TANGENCE**

d.  $\overleftrightarrow{GF}$ : **SECANT**

j.  $\angle BAE$ : **CENTRAL ANGLE**

e.  $\overline{CE}$ : **DIAMETER**

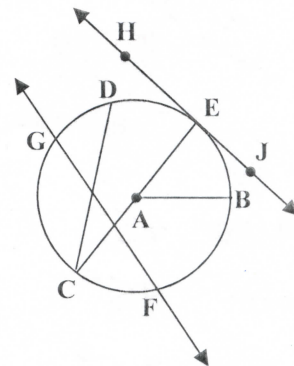
k.  $\angle DCE$ : **INSCRIBED ANGLE**

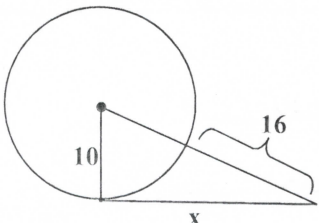
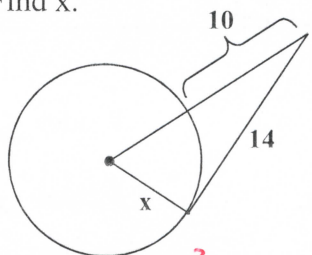
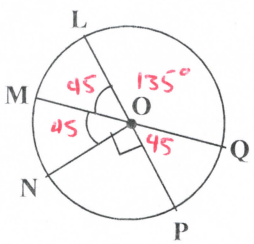
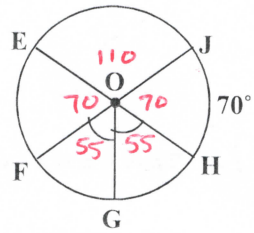
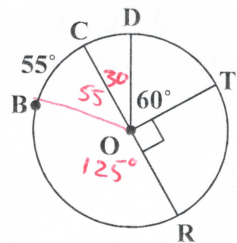
f.  $\overleftrightarrow{FG}$ : **SECANT**

l. Arc BF: **MINOR ARC**

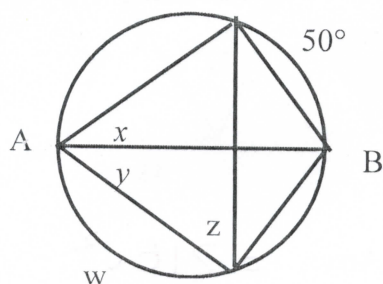
m. Arc BEF: **MAJOR ARC**

n. Arc EGC: **SEMICIRCLE**



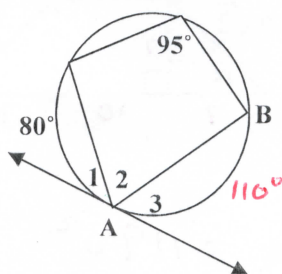
<p>2. The radius of a circle is 6 cm. How long is the diameter? <math>d = 2r</math></p> <p><u>12 cm</u></p>	<p>3. The diameter of a circle is 15 ft. How long is the radius?</p> <p><math>\frac{d}{2} = r</math>    <math>\frac{15}{2} = r</math></p> <p><u>7.5 ft = r</u></p>	<p>4. The radius of a circle is 13 cm. Find the circumference, in terms of <math>\pi</math>.</p> <p><math>C = 2\pi r</math></p> <p><math>= 2\pi 13 \text{ cm}</math></p> <p><u><math>= 26\pi \text{ cm}</math></u></p>
<p>5. The diameter of a circle is 35 cm. Find the circumference to the nearest tenth.</p> <p><math>C = \pi d</math></p> <p><math>= 3.14 \cdot 35 \text{ cm}</math></p> <p><u><math>C = 109.9 \text{ cm}</math></u></p>	<p>6. The circumference of a circle is <math>24\pi</math> in. What is the radius?</p> <p><math>C = 2\pi r</math></p> <p><math>24\pi = 2\pi r</math></p> <p><u><math>12 \text{ in} = r</math></u></p>	<p>7. The circumference of a circle is 37.7 in. How long is the diameter.</p> <p><math>C = \pi d</math></p> <p><math>37.7 = 3.14 d</math></p> <p><u><math>12.0 \text{ in} = d</math></u></p>
<p>8. Find x.</p>  <p><math>x^2 + 10^2 = 26^2</math></p> <p><math>x^2 + 100 = 676</math></p> <p><math>x^2 = 576</math></p> <p><u><math>x = 24</math></u></p>	<p>9. Find x.</p>  <p><math>x^2 + 14^2 = (x + 10)^2</math></p> <p><math>x^2 + 196 = x^2 + 20x + 100</math></p> <p><math>196 = 20x + 100</math></p> <p><math>96 = 20x</math>    <u><math>x = 4.8</math></u></p>	<p>10. You are making a circle graph for your project. What is the measure of the central angle for a category that is 37%?</p> <p><math>360 \cdot .37 = 133.2^\circ</math></p>
<p>11. Find each measure.</p>  <p>a. <math>\angle LOM</math>: <math>45^\circ</math></p> <p>b. arc QP: <math>45^\circ</math></p> <p>c. arc PMQ: <math>315^\circ</math></p> <p>d. <math>\angle QOL</math>: <math>135^\circ</math></p> <p>e. arc QLP: <math>315^\circ</math></p> <p>f. arc LN: <math>90^\circ</math></p>	<p>12. Find each measure.</p>  <p>a. <math>\angle EOF</math>: <math>70^\circ</math></p> <p>b. arc EJH: <math>180^\circ</math></p> <p>c. arc FH: <math>110^\circ</math></p> <p>d. <math>\angle FOG</math>: <math>55^\circ</math></p> <p>e. arc JEG: <math>235^\circ</math></p> <p>f. arc HFJ: <math>290^\circ</math></p>	<p>13. Find each measure.</p>  <p>a. arc TR: <math>90^\circ</math></p> <p>b. <math>\angle COD</math>: <math>30^\circ</math></p> <p>c. arc BT: <math>145^\circ</math></p> <p>d. arc BR: <math>125^\circ</math></p> <p>e. arc BTR: <math>235^\circ</math></p> <p>f. arc TRB: <math>215^\circ</math></p>

14. Solve for the variables



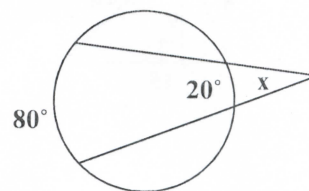
- a.  $w =$  \_\_\_\_\_  
 b.  $x = 25^\circ$   
 c.  $y =$  \_\_\_\_\_  
 d.  $z =$  \_\_\_\_\_

15. Find each angle measure.



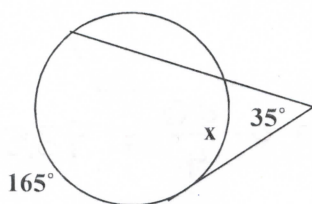
- a.  $\angle 1 = 40^\circ$   
 b.  $\angle 2 = 85^\circ$   
 c.  $\angle 3 = 55^\circ$   
 d. arc AB  $110^\circ$

16. Find x.



$$x = \frac{80 - 20}{2} = \frac{60}{2} = 30^\circ$$

17. Find x.



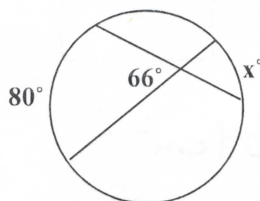
$$35 = \frac{165 - x}{2}$$

$$70 = 165 - x$$

$$x + 70 = 165$$

$$x = 95^\circ$$

18. Find x.



$$66 = \frac{80 + x}{2}$$

$$132 = 80 + x$$

$$52^\circ = x$$

18. What is the center and the radius of the circle with the equation:

a.  $(x-8)^2 + (y+7)^2 = 25$

center:  $(8, -7)$

radius: 5

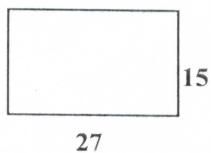
b.  $(x+2)^2 + y^2 = 17$

center:  $(-2, 0)$

radius:  $\sqrt{17} \approx 4.12$

## Chapter 11 – Area and Perimeter

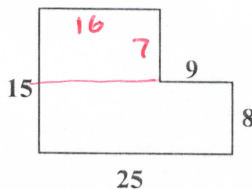
1.



Area:  $= 405 \text{ } \text{m}^2$

Perimeter:  $= 84 \text{ m}$

2.

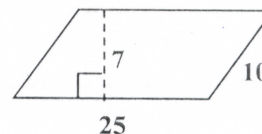


$$A = 8 \cdot 25 + 7 \cdot 16 = 200 + 112$$

Area:  $= 312 \text{ } \text{m}^2$

Perimeter:  $= 80 \text{ m}$

3.

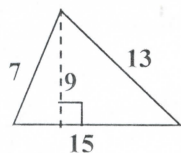


Area:  $= 175 \text{ } \text{m}^2$

Perimeter:  $= 70 \text{ m}$



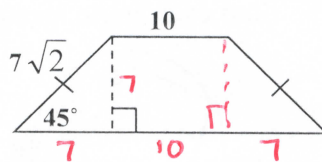
4.



Area:  $= 67.50 \text{ u}^2$

Perimeter:  $= 35 \text{ u}$

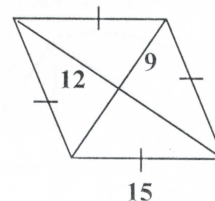
5.



Area:  $= 119 \text{ u}^2$

Perimeter:  $= 34 + 14\sqrt{2}$

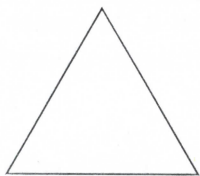
6.



Area:  $= 216 \text{ u}^2$

Perimeter:  $= 60 \text{ u}$

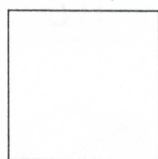
7. Find the area of a equilateral triangle with a side of 9 cm.



$$A = \frac{s^2\sqrt{3}}{4} = \frac{9^2\sqrt{3}}{4}$$

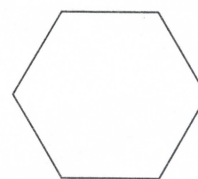
$$= 35.07 \text{ cm}^2$$

8. Find the area of an square with a side of 8 cm.



$$64 \text{ cm}^2$$

9. Find the area of a regular hexagon with a side of 6 cm.



$$A = 6 \cdot \frac{s^2\sqrt{3}}{4} = 93.53 \text{ cm}^2$$

10. Find the area of a circle with a diameter of 14 cm.

$$A = \pi r^2 \quad r = 7 \text{ cm}$$

$$A = 49\pi \text{ cm}^2$$

or

$$153.86 \text{ cm}^2$$

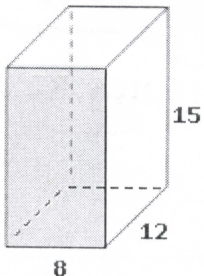
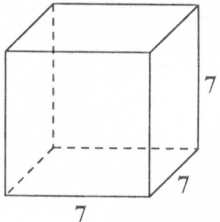
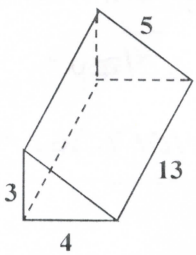
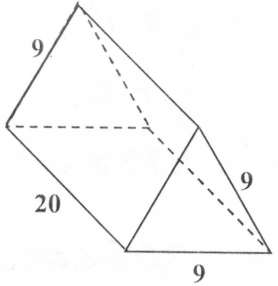
11. Find the area of a regular octagon with a side of 10 ft and an apothem of 12.1 ft.

$$A = \frac{1}{2} a P \quad P = 8 \cdot 10 = 80$$

$$= \frac{1}{2} 12.1 \cdot 80$$

$$= 484 \text{ ft}^2$$

# Chapter 12 – Surface Area and Volume

Figure	Lateral Area	Surface Area	Volume
<p>1.</p>  <p>SHADED SIDE IS BASE</p>	$LA = P \cdot H$ $P = 8 + 15 + 8 + 15$ $= 46$ $LA = 46 \cdot 12$ $= 552 \text{ u}^2$	$B = 8 \cdot 15 = 120$ $SA = LA + 2B$ $SA = 552 + 2(120)$ $= 552 + 240$ $= 792 \text{ u}^2$	$V = B \cdot H$ $= 120 \cdot 12$ $= 1440 \text{ u}^3$
<p>2.</p> 	$LA = P \cdot H \quad P = 28$ $LA = 196 \text{ u}^2$	$B = 7 \cdot 7 = 49$ $SA = LA + 2B$ $= 196 + 98$ $= 294 \text{ u}^2$	$V = B \cdot H$ $= 49 \cdot 7$ $= 343 \text{ u}^3$
<p>3.</p> 	$LA = P \cdot H \quad P = 12$ $= 12 \cdot 13$ $= 156 \text{ u}^2$	$B = \frac{1}{2}bh = 6 \text{ u}^2$ $SA = LA + 2B$ $= 156 + 2(6)$ $= 156 + 12$ $= 168 \text{ u}^2$	$V = B \cdot H$ $= 6 \cdot 13$ $= 78 \text{ u}^3$
<p>4.</p> 	$LA = P \cdot H \quad P = 27$ $= 27 \cdot 20$ $= 540 \text{ u}^2$	$B = \frac{9^2 \sqrt{3}}{4} = 35.07$ $SA = LA + 2B$ $= 540 + 2(35.07)$ $= 540 + 70.14$ $= 610.14 \text{ u}^2$	$V = B \cdot H$ $= 35.07 \cdot 20$ $= 701.40$